2004-05 RABBIT HUNTING COOPERATOR SURVEY REPORT

KENTUCKY DEPARTMENT OF FISH AND WILDLIFE RESOURCES

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METHODS

The 2004-05 Rabbit Hunting Cooperator Survey Report is a summary of two annual surveys conducted by the Kentucky Department of Fish and Wildlife Resources (KDFWR) to estimate rabbit production, hunter effort, and hunter success. First, the Rabbit Hunter Log Survey is a diary-type hunting log used to record information including date of hunt, county hunted, hours hunted, number of hunters, number of dogs, number of eastern cottontail rabbits, swamp rabbits, and Appalachian cottontail rabbits (jumped, harvested, and wounded). Hunters were asked to keep the log to date as the hunting season progressed, and at the season's conclusion, logs were mailed to the KDFWR for analysis. The Mail Carrier Survey represents the second survey employed to monitor rabbit populations across the state. Mail carriers recorded rabbit and quail observations as they traveled their rural delivery routes during the last full week (6 delivery days) of July. Survey cards provided space for observations of young and adult rabbits for each of the survey days. Observers also recorded the number of days surveyed, the length of the route, and the total miles driven. The mail carrier data is used to forecast the upcoming hunting season, monitor the population, and estimate rabbit productivity.

All surveys are strictly voluntary and we strongly encourage all Kentucky rabbit hunters and rural mail carriers to participate in these surveys. Hunter cooperators receive this report, detailing hunting season results, and expectations for the upcoming season. Cooperators also receive a new hunting log for the upcoming season and a small gift of appreciation for their participation. Participating mail carriers receive a subscription to *Kentucky Afield* magazine for their support.

RESULTS AND DISCUSSION

I. Rabbit Hunter Log Survey

Hunting logs were received from 104 hunters who averaged 15 hunting trips each for the season. Data was grouped into weekly and monthly subsets and physiographic region subsets (Appendix A) to identify trends within the season and across the state. From 1,525 logged hunts, the average hunt included 2.3 hunters spending 4.0 hours afield with 4.2 dogs. Hunters recorded hunts in 96 counties across the state (Appendix B), and ninety-seven percent of the hunts included dogs.

Hunting pressure throughout the season remained fairly constant (Figure 1). Peaks of hunting were seen at the beginning of the season, the week following Thanksgiving and the week between Christmas and New Year’s holidays. Monthly subsets revealed the proportion of hunts and the proportion of harvest were quite similar, but later season hunts (January and February) were slightly more productive (Figure 2). Cooperator numbers have fluctuated in the past, however, last year the number remained stable with just one less hunter than 2003-2004 (Table 1).

Total rabbits jumped averaged 6.1/hunt (1.5/hr), and rabbits harvested averaged 2.6/hunt (0.6/hr). Compared to 2003-04, jump rates decreased by 11.5%, whereas

harvest rates decreased by 10.1%. Jump and harvest rates remained fairly constant throughout the season (Figure 3). Additionally, the jump and harvest rates by species have dropped steadily over the last three seasons except for Appalachian cottontails, which have fluctuated (Table 2). However, sample sizes for Appalachian cottontails are far too low to indicate any change in the population or in hunter effort and success. Harvest and jump rates by species were calculated by the following assumptions: 1) if Appalachian cottontail or swamp rabbits were jumped, it was assumed Appalachian or swamp rabbits were being hunted, 2) if eastern cottontails were jumped and an Appalachian cottontail or swamp rabbit was jumped, it was assumed the Appalachian cottontail or swamp rabbit was being hunted, and 3) if no rabbits were jumped, it was assumed the eastern cottontail rabbit was being hunted (because cottontails comprise 98% of the harvest and are the most common).

Over the past three hunting seasons, hunting mortality (harvested and wounded individuals) remained less than 50% of the rabbits jumped (Table 1). Wound rates (2%) have remained constant as well. Cottontail rabbits continue to dominate the harvest as expected (Figure 4).

We have a particular interest in reports of swamp and Appalachian cottontail rabbits. Both species suffer from habitat loss and populations are declining rangewide. Data from this year's hunting logs showed that Appalachian cottontails were jumped 15 times and 4 rabbits were harvested. Reports of Appalachian cottontails were down this year, but our sample size was too low to infer any change in population. This season's observations came mainly from Lewis County, with one jump reported in Pike County. Swamp rabbits were jumped 110 times and 36 rabbits were harvested. Reports came from 10 western counties. Based on data from hunter logs, swamp and eastern cottontail populations remain stable, but both species experienced population booms in 1996 (Figure 5). Inadequate sample sizes make annual comparisons of Appalachian cottontail data impossible. Further investigation of swamp and Appalachian cottontail rabbits may be required to identify existing population levels and locations.

The highest rabbit jump rates in the state were found in the Outer Bluegrass, Inner Bluegrass, and Western Pennyroyal physiographic regions (Figure 6). The Inner Bluegrass region had the highest harvest rates, and won the honor of being the state's best marksmen, harvesting 56% of the rabbits jumped. The rest of state's percentage of jumped rabbits harvested ranged from 26 to 48%. Hunter participation was especially low in Inner Bluegrass and Eastern Pennyroyal regions. Given the success of the hunters reporting in the Inner Bluegrass, the bulk of the cooperators may have missed out on some good hunting!

II. Mail Carrier Survey Results

The Mail Carrier Survey provides a glimpse of what we can expect for the upcoming hunting season. The survey is the oldest in the program being completed for 45 years. Although no population estimates can be derived from this data, it does provide valuable trend information showing whether the population is up, down, or stable.

In 2005, mail carriers returned 783 of the approximately 1,600 survey cards issued, which corresponds to a 48.9% response rate. Rural carriers covered 249,573 miles and observed 3,360 rabbits. The statewide observation rate was 1.36 rabbits/100 miles traveled. Juvenile rabbits comprised 57% of the rabbit observations compared to 56% juveniles in 2004. Observations of rabbits/100 miles by physiographic region showed population decreases across the state (Table 3). The Jackson Purchase region incurred the greatest decrease in observation rate at 58.8%, whereas the Eastern Pennyroyal region yielded an 18.0% decrease in observations. The net result was a 37.5% decrease in observation rates across the state.

Over the last 45 years of this survey, the decline in the rabbit population is evident (Figure 7). The severe drop in population levels following the winters of 1977 and 1978 was dramatic and populations have not recovered. The rabbit population trend corresponds to a 1.0 % decline per year over the life of the survey. The overall drop in rabbit numbers since the late 1960's can be generally attributed to habitat loss because of land use changes and cleaner agricultural practices. In 2005, the statewide index decreased dramatically following five years of surveys that were quite good. Subsequently, rabbit populations have remained fairly stable for the last two decades (Figure 8).

SUMMARY

The Mail Carrier Survey and the Rabbit Hunter Log Survey appear to be tracking each other well. Therefore, we can make predictions based on the Mail Carrier Survey results. Breaking down data by physiographic regions generally makes predictions more difficult as sample sizes become smaller compromising reliability. However, by combining physiographic regions into western (Jackson Purchase, Western Coalfield, and Western Pennyroyal), central (Inner, Outer, and Hills of the Bluegrass), and eastern (Eastern Pennyroyal and Eastern Coalfield) zones, projections become a little clearer. With that in mind, all three zones will likely experience a decrease in hunting action this season, with the eastern zone remaining the most stable.

Rabbit populations seem to be stabilizing across the state. Our survey indices are showing oscillations characteristic of population stability. Upon comparison, rabbit populations are far below those on the late 60's and early 70's. Fortunately, rabbits generally have small home ranges and localized management should generate a positive response, but large-scale changes in the cottontail rabbit population in Kentucky will require widespread management of the agricultural environment. Swamp rabbits and Appalachian cottontails requirements are much more difficult to attain particularly when habitat loss is irreversible, so we continue to keep a watchful eye on both of those species.

Overall the 2004-05 rabbit season was fair to good. Over the last 20 years, the population has remained fairly stable with bumps up and down. Last year, jump rates were down 12%, and harvest rates were down 10%. Unfortunately, this year will

probably be somewhat worse. As always, though, pockets of good habitat will continue to hold rabbits, and hunters should still be able to give the dogs plenty of exercise.

ACKNOWLEDGMENTS

We would like to say a special thanks to all those who have participated in the various small game surveys over the years. Your cooperation provides us with valuable data necessary to make wise management decisions regarding rabbit populations and hunting seasons. With that in mind, we ask that you recruit your friends and neighbors who also rabbit hunt to join you in being a hunting cooperator. We need many more cooperators to accurately track rabbit populations across the state.

Participation in the rabbit hunting survey was stable last year, with 104 hunters completing hunting logs. Fortunately, those hunters did a lot of hunting (over 1,500 hunts)! Nevertheless, we would like to have at least 2,000 hunts well distributed across the state. The more cooperators we have, the more accurate picture we have of our rabbit populations. The hunting logs are available in the 2005-06 Hunting and Trapping Guide, on the internet (www.fw.ky.gov), through wildlife/boating officers, private lands biologists, and wildlife management area staff, or by contacting the Kentucky Department of Fish and Wildlife Resources at #1 Game Farm Rd. Frankfort, KY 40601 (1-800-858-1549). Thank you to all whom participated this year, and we hope to hear from you and all of your hunting partners in next season's surveys.

Counties not represented in the Rabbit Hunter Log Survey, 2004-05.

Bell	Fulton	Montgomery
Bourbon	Hickman	Morgan
Casey	Johnson	Perry
Clark	Lawrence	Powell
Clinton	Magoffin	Rowan
Elliott	Martin	Scott
Estill	Menifee	Simpson
Floyd	Mercer	Taylor

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Table 1. Summary statistics from the Rabbit Hunter Log Survey in Kentucky,

2001-2005.

Statistics	2001-02	2002-03	2003-04	2004-05
Cooperators	117	99	105	104
Hunts	1,870	1,589	1,593	1,525
Counties	103	99	93	96
Hunts/Hunter	16	16	15	15
Hours Hunted	6,857	6,037.5	5,847.9	6088.7
Dogs Used	7,396	6,755	6,883	6,415
Total Rabbits Jumped	13,758	11,276	10,126	9,326
Total Rabbits Harvested	6,198	5,129	4,222	3,951
Total Rabbits Wounded	318	226	259	293
Hunting Mortality (%)	47	48	44	46

Table 2. Rabbit jump and harvest rates by species in Kentucky, 2002-2005.

	Eastern			Swamp			Appalachian		
Year	02-03	03-04	04-05	02-03	03-04	04-05	02-03	03-04	04-05
Total Hunts	1,535	1,533	1,488	49	53	32	5	7	5
Jumped/Hunt	7.02	6.27	6.11	4.39	4.25	3.44	1.60	4.14	3.00
Jumped/Hour	1.87	1.73	1.54	0.90	0.91	0.72	0.40	0.94	0.71
Harvested/Hunt	3.21	2.65	2.60	1.94	1.62	1.13	0.60	1.29	0.80
Harvested/Hour	0.85	0.73	0.65	0.40	0.35	0.24	0.15	0.29	0.19
Wounded/Hunt	0.14	0.14	0.22	0.06	0.23	0.09	0.20	0.14	0.00
Wounded/Hour	0.04	0.04	0.06	0.01	0.05	0.02	0.05	0.03	0.00

Table 3. Mail Carrier indices and rates of change in Kentucky, 1961-2005.

PHYS. REGION	TOTAL QUAIL/100 MILES			PERCENT CHANGE	
	MEAN			MEAN	
	1961-2005*	2004	2005	2005/ 1961-2005	2004/ 2005
Jackson Purchase	1.64	1.12	0.54	-67.3	-52.1
Western Pennyroyal	2.08	1.87	0.96	-53.9	-48.7
Western Coalfield	1.74	2.04	0.84	-51.6	-58.8
Inner Bluegrass	2.30	1.79	0.79	-65.5	-55.8
Knobs – Outer Bluegrass	2.56	2.62	1.73	-32.3	-33.9
Hills of Bluegrass	2.51	2.12	1.19	-52.4	-43.7
Eastern Pennyroyal	1.68	1.95	1.60	-4.4	-18.0
Eastern Coalfield	2.76	2.73	2.16	-21.8	-21.0
Statewide	**2.22**	**2.17**	**1.36**	**-39.0**	**-37.5**

*No data available for 1964.

Figure 1. Hunts per available day index from Kentucky Rabbit Hunter Log Cooperator Survey, 2004-05.

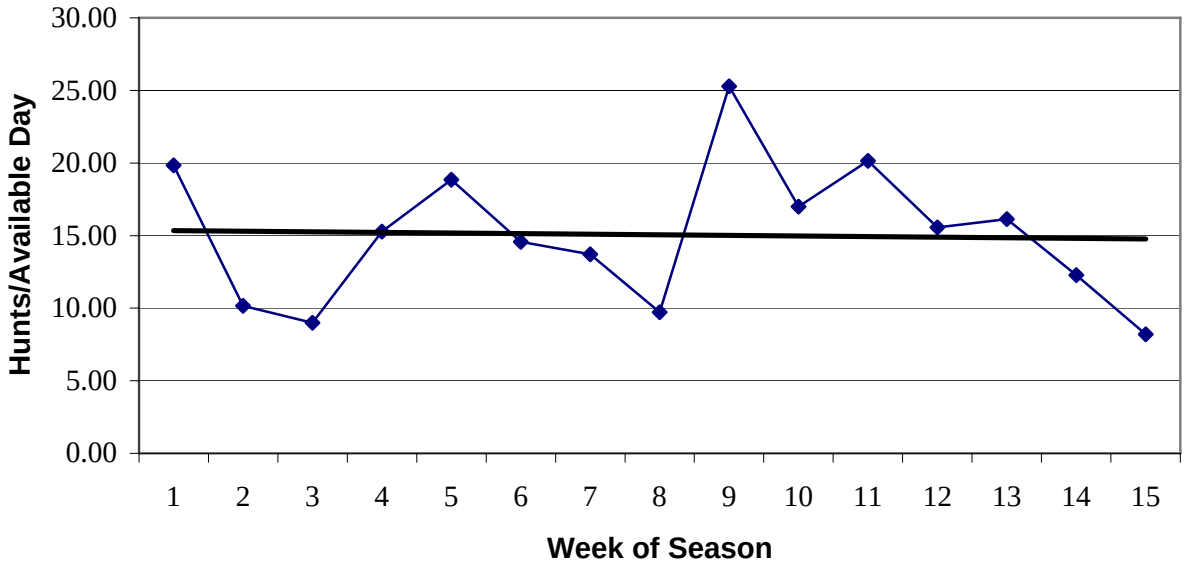


Figure 2. Hunting effort and harvest by month from the Kentucky Rabbit Hunter Log Cooperator Survey, 2004-05.

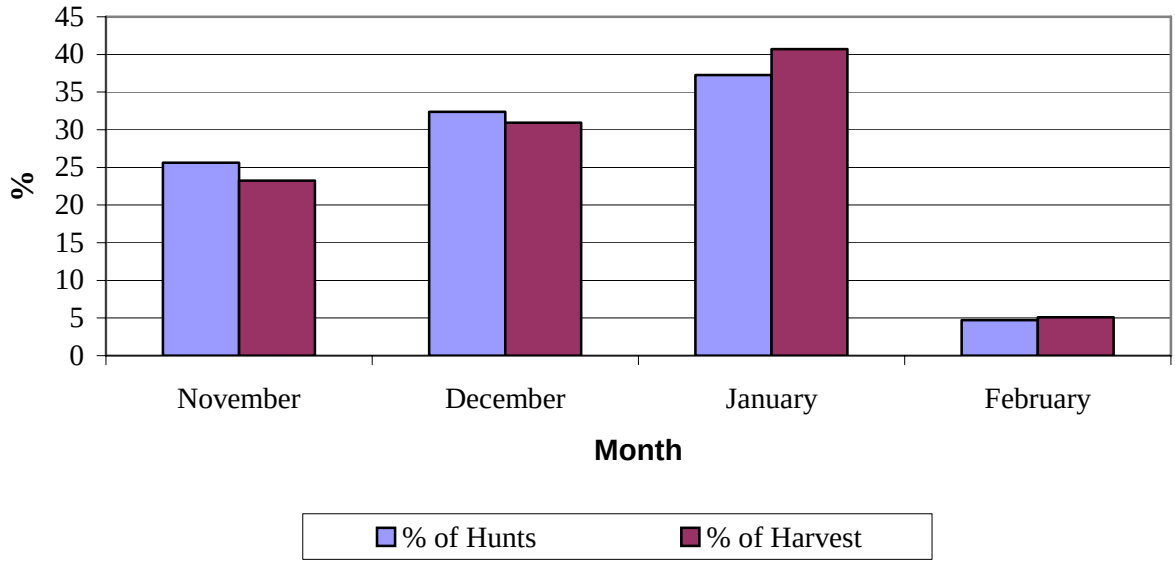


Figure 3. Total rabbits jumped and killed per hour from the Kentucky Rabbit Hunter Log Cooperator Survey, 2004-05.

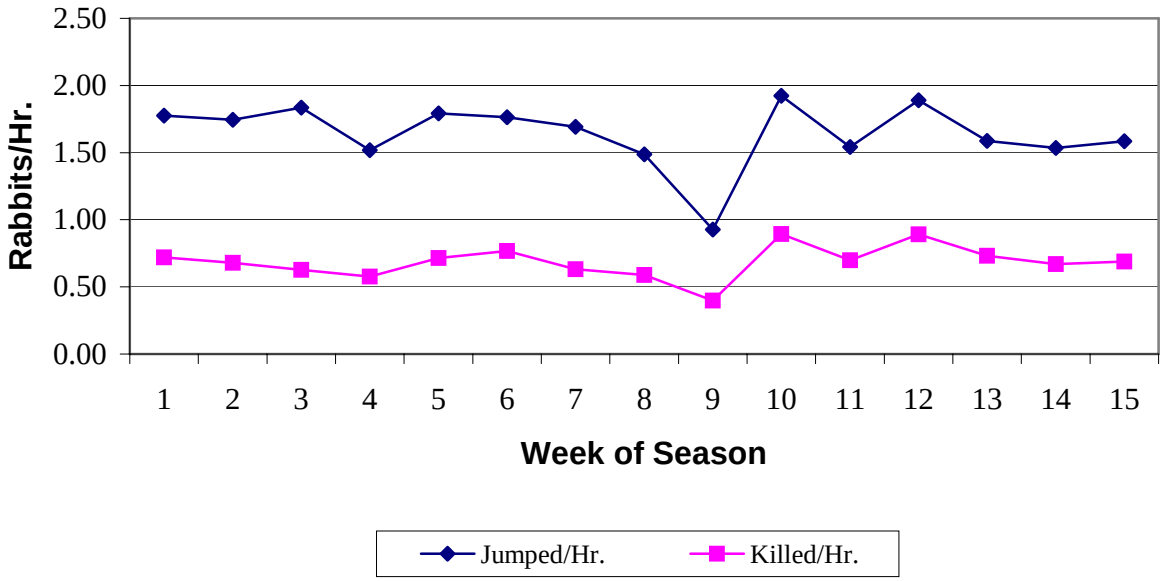


Figure 4. Proportion of rabbit species in the harvest from Rabbit Hunter Log Cooperator Survey in Kentucky, 2004-05.

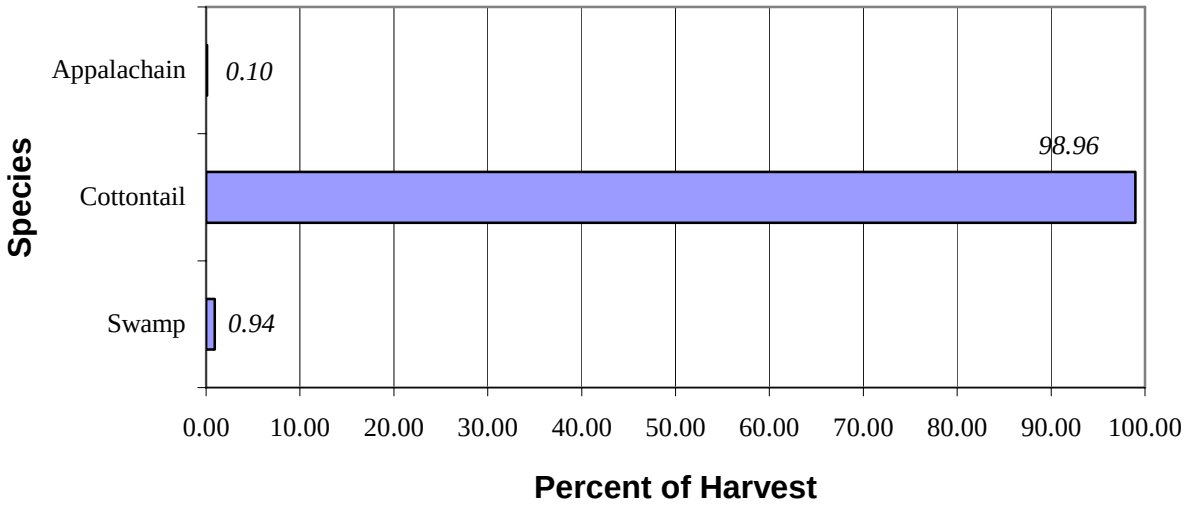


Figure 5. Cottontail and swamp rabbits jumped per hour from Kentucky Hunter Log Cooperator Surveys, 1995-2005.

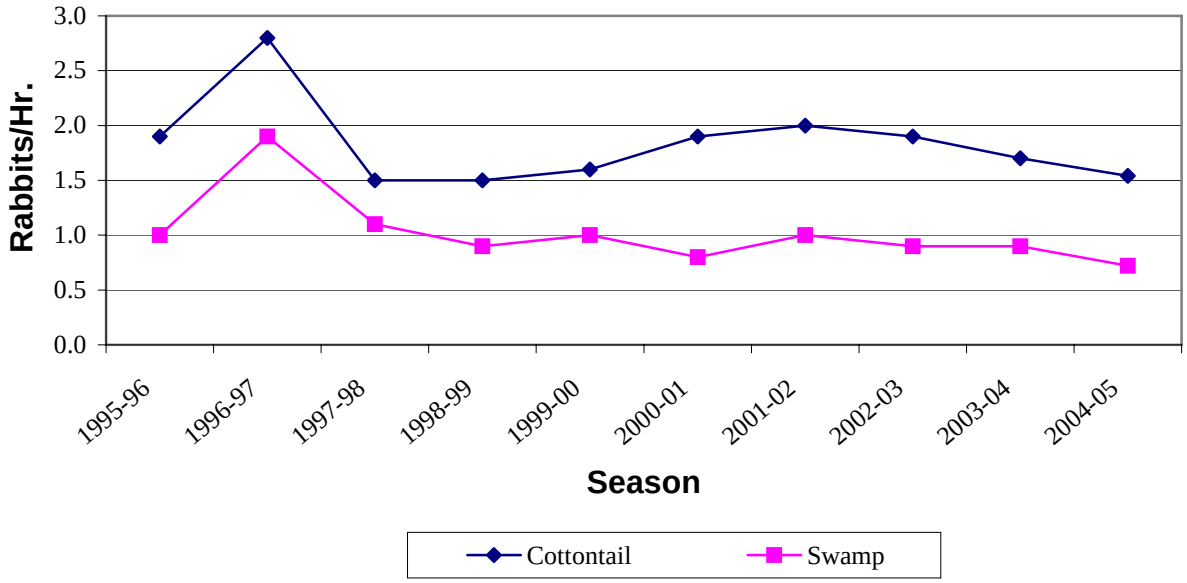


Figure 6. Rabbits jumped and harvested per hour by physiographic region from the Rabbit Hunter Log Survey in Kentucky, 2004-05.

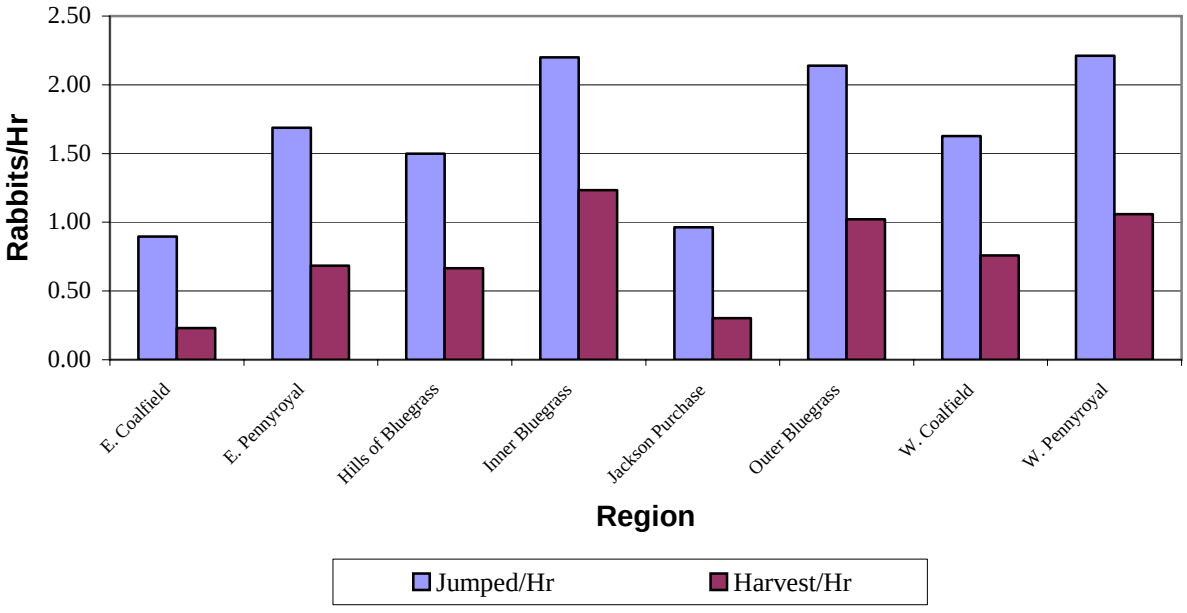


Figure 7. Rabbits observed per 100 miles from the Mail Carrier Survey in Kentucky, 1961-2005.

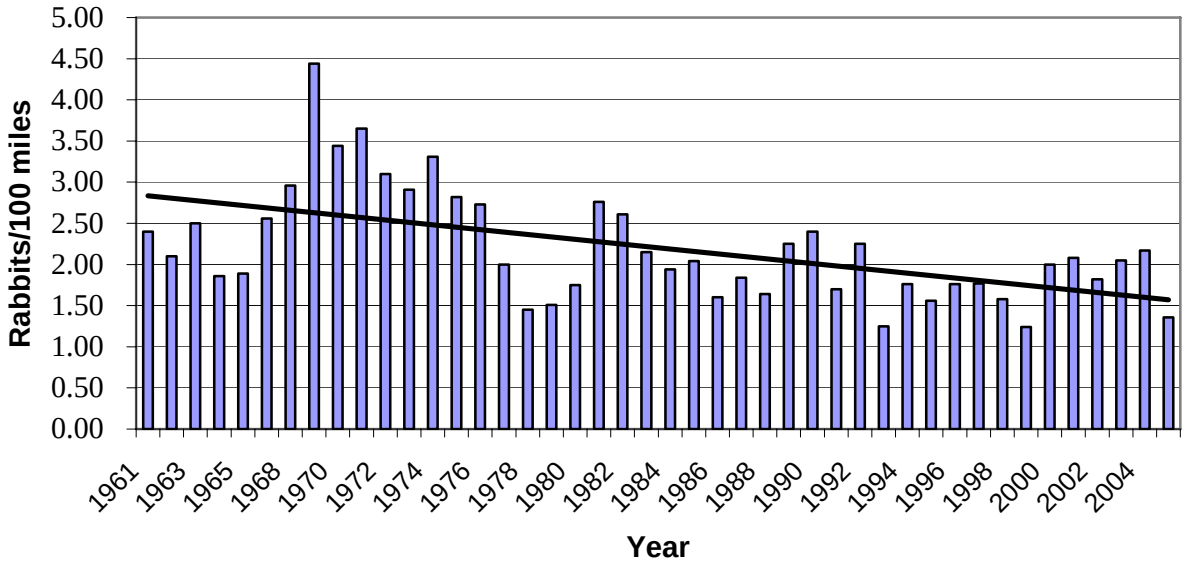
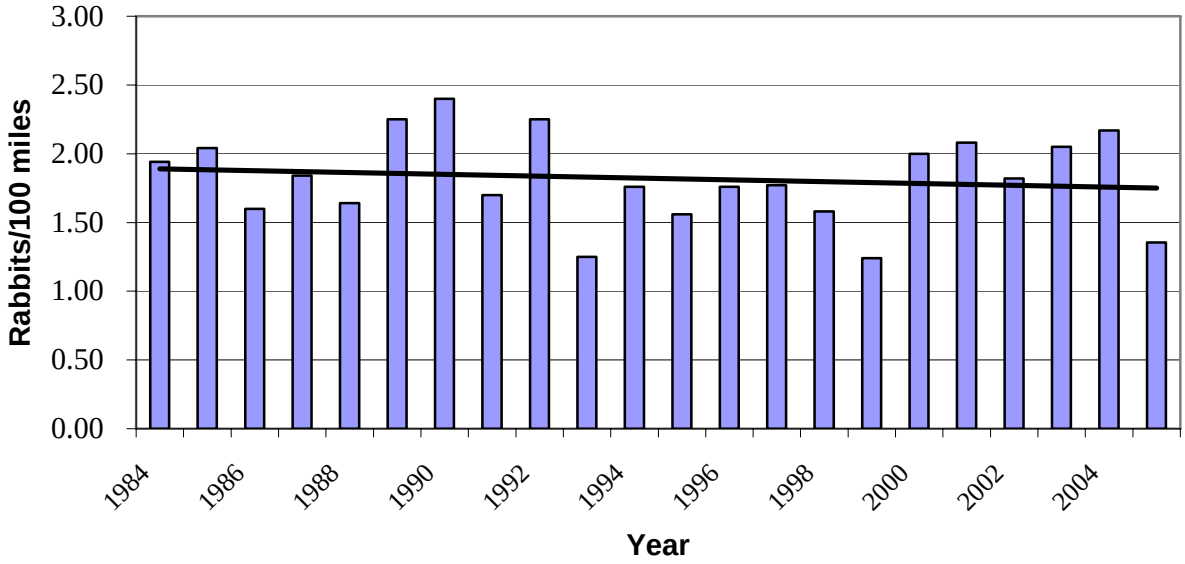
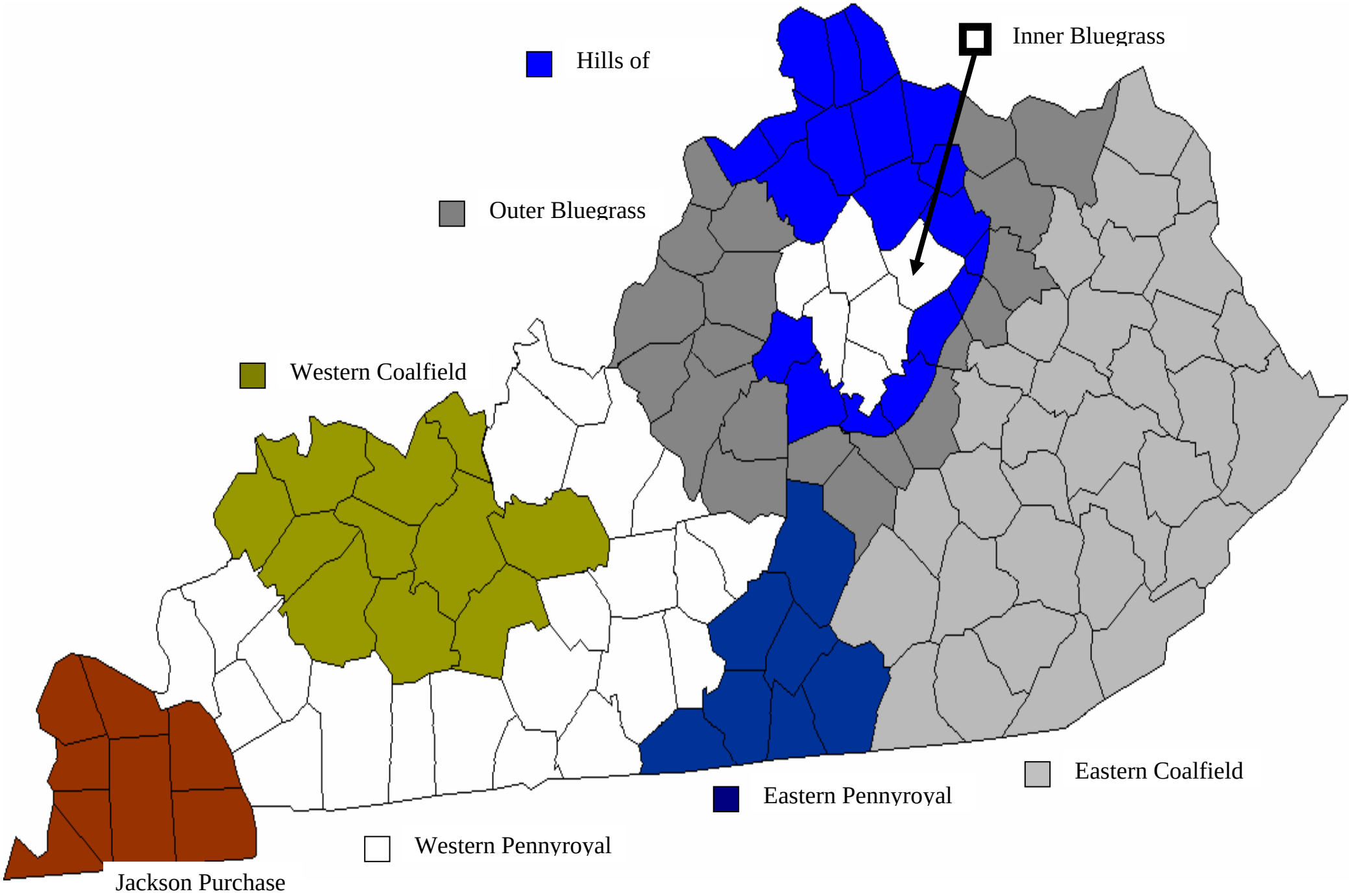


Figure 8. Rabbits observed per 100 miles from the Mail Carrier Survey in Kentucky, 1984-2005.



Appendix A. Physiographic regions of Kentucky.



Appendix B. Distribution of hunts from the Rabbit Hunter Log Survey, 2004-05.